

The Kentucky PSC was forwarded the Economic Dispatch survey, and subsequently requested the jurisdictional generating companies in Kentucky to respond to the survey.

To date we have received responses from Big Rivers Electric Corporation, American Electric Power (AEP), and East Kentucky Power Cooperative (EKPC). Below are their responses to the survey:

**Item 1:**

Big Rivers: All generating units within the Big Rivers control area are dispatched under contract by LG&E Energy Marketing (LEM). Big Rivers is not aware of the details of the dispatch or economic dispatch procedures employed by LEM.

AEP: AEP is a transmission owner in three RTO's (PJM, SPP and ERCOT) and a member of a fourth (MISO). All four RTO's have been found by FERC to have sufficient size and scope. All four RTOs use (or will use) a security-constrained economic dispatch algorithm to solve for the most economic selection of member resources needed to reliably serve the load obligations within their respective regions.

In the East, AEP is a transmission owner in PJM, which economically dispatches all participants' generation - including LSEs' generation and non-utility generation. AEP is also a market participant in the MISO, which also uses economic dispatch.

In the West, AEP currently operates a control area where it economically dispatches its own units within the SPP RTO, while also purchasing the most economic power (utility and non-utility) available from the market. Beginning in May 2006, AEP will effectively cede economic dispatch to SPP. AEP units located within the ERCOT footprint are economically dispatched by ERCOT.

EKPC: Economic Dispatch (ED) is performed by EKPC at two levels: (1) Units that are not needed for load regulation are loaded based on load requirements first and economics second. (2) Enough units are placed under Automatic Generation Control (AGC) to provide adequate load regulation. These units are dispatched economically through an automatic ED subsystem of the Energy Management System (EMS).

EKPC currently performs its own dispatching. EKPC is a utility, which serves load in 89 counties in Kentucky. EKPC's peak load is 2719 MW with generation resources of 2530 MW. EKPC serves 16 member cooperatives that serve approximately 487,296 customers.

**Item 2:**

Big Rivers: The definition of economic dispatch contained in the Energy Act is appropriate as long as all of the factors affecting cost are considered. Environmental limitations or constraints, fuel supply limitations or constraints, effects on future generating unit maintenance costs, effects on forced outage rates and unit availability rates, and possibly other considerations should be part of the cost analysis within any economic dispatch process.

AEP: The definition is appropriate. Although well theorized and actively implemented, the reality is, true economics are severely limited by the congestion constraints of the transmission grid. Regularly, these constraints prevent full optimization of economic generation. Such constraints are not necessarily eliminated as scale or area is increased.

AEP participates in some of the largest RTOs in the United States. The assumption to date has been that relevant to RTO size, bigger is better. AEP would urge caution before basing many

critical decisions on this assumption. When analyzing modeling data, the bigger-is-better concept would seem to hold true. But modeling data is devoid of the real-time imperfections that impact daily operations of an actual system. In the real world, contingencies such as congestion and temporary constraints, manual overrides to dispatch and other technical functions are exacerbated by scale.

AEP's contention is that a point of diminishing returns definitely exists in regard to RTO size, and some existing RTOs in the U.S. may in fact have reached that point.

The scale of an RTO should be determined by the RTO and its members, based on the existing generation mix, load and transmission constraints, while considering the ability of the RTO/control area to reliably and effectively solve the computation, given current technology, and allow sufficient time for the members to respond to changes in a safe and reliable manner. Constraints do not disappear because an RTO footprint is large. A larger footprint may offer enticing financial incentives for an RTO. It does not eliminate the practical challenges of economic dispatch in a capacity-constrained transmission grid.

While pundits and analysts can debate ad infinitum the most perfect size for an RTO, AEP would propose that with a sufficiently robust transmission system, the exact proportions of its governance bodies becomes a moot point.

EKPC: Yes, the Act's definition of economic dispatch is appropriate.

ED should be practiced over the resources any controlling body has available to it. ED should not be practiced over areas larger than the controlling body has immediate and intimate knowledge of.

No, provided all costs and all measures of reliability are properly accounted for. Costs should include: (a) Variable Fuel Costs, (b) Variable Operating and Maintenance, (c) Variable Environmental Compliance Costs, (d) Unit Startup and Shutdown Costs and (e) Costs of Transmission Constraints. Reliability concerns include: (1) Transmission Constraints, (2) Potential Impact of TLRs and loss of power purchase capability, and (c) Potential Impact of losing another on-line unit.

### **Item 3:**

Big Rivers: Since only one classification of generation is currently dispatched on the Big Rivers system, no procedural differences currently exist.

AEP: Economic dispatch, by definition and design, does not distinguish between utility and non-utility generators. It is AEP's position that it should stay that way. The economic dispatch protocol calls for units to be selected based on one criterion alone: cost. The cost incorporates fuel and emissions costs as well as operating parameters such as notification time, minimum and maximum run times, start-up costs, no-load costs and location. Ownership and other ancillary considerations do not enter into the equation. This protocol may not provide safety nets or special considerations for certain classes of generation owners. But it does ensure that the societal benefit of obtaining the lowest cost power on an ongoing basis is accomplished. In order to realize the benefit of the lowest cost alternative, each generator must provide accurate cost information and must follow dispatch instructions, in effect transferring control of its generation to the dispatcher.

Any changes to economic dispatch procedures would result in less economic decisions which would result in higher customer cost. Non-utility generators could increase their dispatch by

participating with or joining an RTO. AEP endorses the RTO solution to widespread economic dispatch and would not endorse any additional changes at this time.

EKPC: EKPC does not have non-utility generation in its Control Area.

Actual operation practices can differ from economic dispatch due to such factors as transmission reliability and the need for load regulation as required by NERC.

The differences identified above occur regularly. The impact upon retail customers can range from minimal (load regulation) to dramatic (transmission reliability): (i) Load regulation is necessary on a constant basis, as electric power generation must match electric power consumption, and it is the utility's responsibility to ensure so. The costs of this regulation include increased unit maintenance, loss of full economic dispatch capability, and decreased effective heat-rates. These costs occur continuously, but are considered costs of providing reliable service to retail customers. (ii) Redispatch due to transmission reliability concerns happens several times weekly for EKPC. The costs of this can have a substantial impact upon the retail consumer when a gas-fired turbine must be used in place of a much lower-cost (1/3 the cost) coal-fired unit or market purchase.

NA (specific analysis or studies to document position)

**Item 4:**

Big Rivers: Big Rivers has no opinion with respect to changes in economic dispatch procedures that would lead to more exempt wholesale generator dispatch since by contract its entire system resources are in this category.

AEP: See response to Question #3

EKPC: None, as no non-utility generation is dispatched by EKPC.

NA (changes needed to current economic dispatch procedures)

**Item 5:**

Big Rivers: Assuming that adequate transmission expansion occurs to support generation resource additions (non-utility or otherwise), then any new generation being dispatched in a local area will enhance service reliability to the local retail customers.

AEP: See response to Question #3

EKPC: NA, we do not dispatch any non-utility generation.

NA

NA

**Item 6:**

Big Rivers: Changes in economic dispatch patterns from that assumed when the generation was sited and the transmission expansion required to support that generation was determined could easily have a negative impact on grid reliability.

AEP: See response to Question #3

EKPC: Yes, If units were dispatched solely upon economics. Frequency variability would be greater due to less load following, and transmission reliability could suffer due to utilizing cheaper units that were geographically isolated from the load served.

Economic dispatch should remain a function of the entity that is familiar with the reliability needs and concerns of the region served by those units.

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